

GeoDome Lesson 4: Planets

Set Feet on the Ground, Current Time, Turn on Planet Labels for Mercury, Venus, Mars, Jupiter and Saturn. Turn on Constellation lines only.

Info: The definition of planet has changed through time. In ancient times, “planet” referred to the 5 “wandering stars” that we call Mercury, Venus, Mars, Jupiter and Saturn. These wanderers only appeared in a series of 12 constellations that we call the Zodiac. We now know that that is because the plane of our orbit causes us to view the planets in their orbits against the backdrop of stars and that our position in our orbit forces us to view a different area of the galaxy each season.

Advance time and watch the planets travel through the constellations.

Move/fly to a view of the sun and inner planets. Gradually pull out from the center and pass the asteroid belt, Jupiter, and Saturn.

Add a label for Uranus and pull back to add it in.

In 1781 William Herschel discovered Uranus (YER-un-us) which he wanted to name after King George the Third, his patron. In 1801, the largest asteroid Ceres was discovered between Mars and Jupiter and became the 8th planet until more asteroids were discovered and it was demoted to asteroid status. All the asteroids together would not make up even a small planet.

Add the label for Ceres if possible – it might not be visible unless you fly back in.

Add a label for Neptune and fly out to its orbit.

In 1846, Neptune was discovered and our Solar System once again had 8 planets. It wasn't until 1930 that Pluto was discovered. At the time it was thought to be about the size of Mercury and so became our 9th planet. In 1978, Pluto was resolved by a better telescope into a small planet and a large moon – Charon is $\frac{1}{4}$ the size of its planet. Recalculation showed Pluto to be smaller than our Moon and the great debate was on.

I'm not sure what it's going to look like when you pull out into the Kuiper Belt and I'm not sure if there's labels for Pluto, Eris, Makemake, and Haumea. But if they can be added it...when you pull out past Pluto, you'll see the orbits of Pluto, Eris and Ceres are blue. Pluto and Eris have elongated and tipped orbits compared to the fairly regular orbits of the other planets. Haumea and Makemake have not been added to the program yet.

What is a planet? By 2006, the debate moved to the IAAU and it was suggested that a planet in our Solar System must 1) orbit the Sun, 2) have enough gravity to pull it into a spherical shape, and 3) have cleared its orbit of all debris. #3 is still being debated. This came about because of

the discovery of an object beyond Pluto's orbit that was bigger than Pluto and had its own moon. It was designated 2003UB313. In 2006, it was given the name Eris after the Greek goddess of chaos which seemed to fit after all the mess it made of our solar System! At the end of the IAAU meeting, Pluto had been demoted to a dwarf planet status and joined by Eris and Ceres. Now our Solar System was 8 major planets and 3 dwarf planets. Unfortunately more discoveries were being made all the time.

In December 2009, 2 more dwarf planets were added. 2003EL61 became Makemake after the Polynesian god of creation and 2005FY9 became Haumea after the Hawaiian goddess of creation. Because of this, it was proposed that our solar System should be

4 Terrestrial (Earth-like) small rocky planets

Mercury, Venus, Earth, and Mars

[Look at each up close.](#)

1 Dwarf planet

Ceres

[Look at Ceres – point out the nice spherical shape – if you want compare this to either of Mars' moons, which are captured asteroids and very baked potato in shape.](#)

4 Jovian (Jupiter-like) giant gaseous planets

Jupiter, Saturn, Uranus, Neptune

[Look at each gas planet](#)

4 Plutoids (Pluto-like) tiny dirty snowballs of rock and ice

Eris, Pluto, Makemake, Haumea

[Look at Pluto and Eris.](#)

A good site for keeping up with planets in our system is:

<http://solarsystem.jpl.nasa.gov/planets/index.cfm>

The area beyond Neptune's orbit is called the Kuiper (KY-per) Belt. This area extends out about 3 billion miles to the Oort Cloud.

Working Notes

Start at Earth

Data sheet for planets and moons

Apollo landing sites on Moon view?

why can't we turn on the constellation individually

Earth view , rotate to night side, landforms, light areas of population and industry

Night sky, center S, opposite doorway

Add labels only for moon, Venus, Mars, Jupiter, Saturn, maybe Mercury

Possible to add constellation lines individually??? As you talk about each?

Not yet, but hopefully soon.